

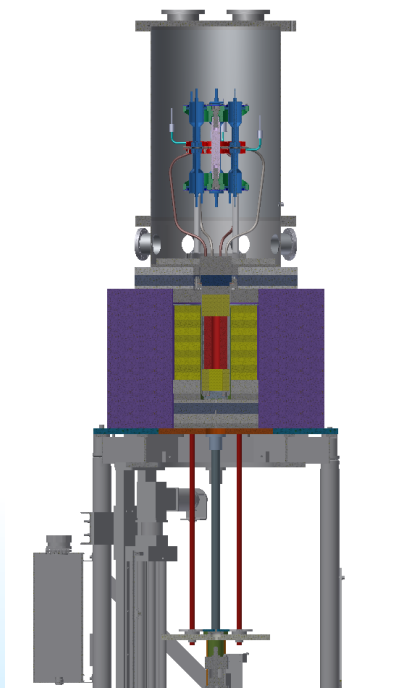
KRUSTY Experiment – Update on Safety Basis

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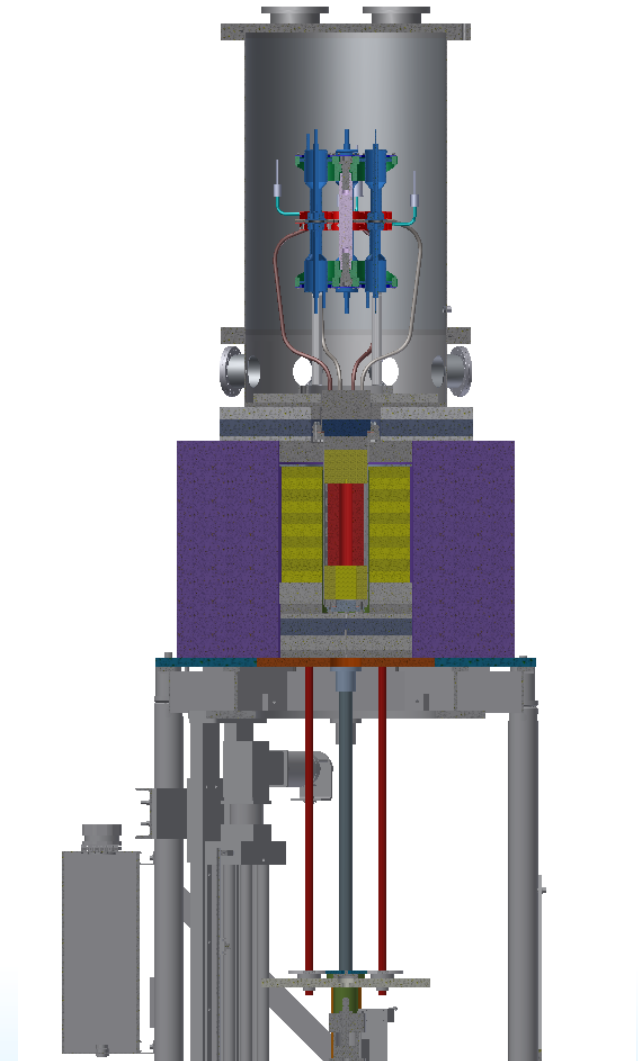
Contributing SMEs: McClure, Strelow

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KRUSTY Integration Test (DAF)

- Kilopower Reactor Using Stirling Technology
 - Experiment using critical assembly at NCERC at Device Assembly Facility at NNSS
 - Same system configuration as earlier DU thermal vacuum testing
 - HEU core (red)
 - BeO reflector (yellow, movable component)
 - Stainless steel shield (purple)
 - Vacuum chamber over Stirling engines





KRUSTY Experiment – Update on Safety Basis

Status of Recent Activities

- NASA personnel visited DAF/NCERC (Jan 20)
- Safety Basis Strategy approved by NNSA/NFO (Feb 2)
 - Developed by collaborative effort
- Briefing to NNSA/NFO Safety Basis Review Team (Feb 4)
- Schedule for key inputs to SB
 - April 18: NASA to provide experiment design, layout, procedures, etc.
 - June 28: Core analyses complete and confirmed by electrically heated system tests
- Safety basis submittal to NNSA/NFO (90% for review) — Oct 3
- Work has begun on KRUSTY Amendment to DSA (introductory material, methodology, etc.)
- Core analyses by LANL in progress



Over-View SB activities

- Range and status of Safety Basis activities
 - Analyze the physics of excess reactivity insertion (in progress)
 - Calculate the dose from an accidental release during an excess reactivity excursion (in progress)
 - Hazards Analysis (to begin on receipt of input from NASA Glenn; preliminary work in progress)
 - Identify/assess TSR controls (finalize after June 28 milestone)
 - Review
 - Approval



Summary of Risks to SB Development

- The ability of agencies (NASA, LANL, LLNL) to complete timely and reliable input to NSTec for Safety Basis development, including (but not limited to):
 - Final Design Package
 - Operating Procedures
 - Reactor multi-physics analyses
 - Nuclear Criticality Safety Evaluation
- Competition with other NNSA/NFO Safety Basis review priorities